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THE DWARF MISTLETOE IN NEW ENGLAND.

Arceuthobium pusillum, Peck, the dwarf mistletoe, is without doubt one of the most interesting plants in our New England flora. As a flowering parasite it is, we believe, unique for this region in germinating directly upon the host-plant. Its parasitism is therefore unusually continuous and undoubtedly of long standing, — a fact shown both by the absence of green coloring-matter and by the extreme reduction of the leaves, which appear only as scale-like rudiments. It is probable that the dwarf size is also a characteristic acquired after the development of the parasitic habit, since as parasitism advances the stem as well as the leaf ceases to have its usual physiological significance and, except in cases like the dodder where the stem functions as a running root-stock, it is apt to decrease in length and even disappear altogether as in parasites like *Apodanthes* or *Rafflesia*, in which the flowers are essentially sessile upon the host-plant. *Arceuthobium pusillum* is also interesting from the fact that it is in the northeastern United States an outlying representative of the large and chiefly tropical family of the *Loranthaceae*, to which belong also the true mistletoe of Europe, *Viscum album*, L., and the false or American mistletoe, *Phoradendron flavescens*, Nutt. The latter plant occurs from New Jersey to Ohio, Missouri, and southward. The tropical members of the family, of which there are more than five hundred species, exhibit by their yellow-green and olive-brown color all stages in the degeneration of their assimilative tissue. Some of them have, however, unlike our northern species, rather large and showy flowers.

Through the kind co-operation of Messrs. von Schrenk, Jack, Jones, Eggleston, and Fernald, who have made independently a number of almost simultaneous discoveries relative to the dwarf mistletoe, it is possible to present at one time the following papers which greatly

extend the records of the species. We are also indebted to Mr. C. E. Faxon for his detailed drawings, and to Mr. F. Schuyler Mathews for the skillful retouching by which the photographs have been prepared for half-toning.

NOTES ON ARCEUTHOBIUM PUSILLUM.

HERMANN VON SCHRENK.

(Plate 12.)

IN the latter part of the year 1871, Mrs. Lucy A. Millington found a small mistletoe on the black spruce, *Picea Mariana*, B.S.P. (*P. nigra*, *Ait.*) at Warrensburg, Warren County, New York and about the same time Prof. C. H. Peck discovered the same plant at Sandlake, Rensselaer County, New York. Specimens were sent to Dr. Engelmann who recognized in the plant an *Arceuthobium* which he called *Arceuthobium minutum*.¹ Much astonishment was expressed at the time that this curious plant had not been found before, and we find numerous accounts of it in the periodical literature of that day.² Collectors searched for new stations with great zeal and a number of these were found in New York (notably in Sullivan County), in Pennsylvania, and in New Hampshire. The mistletoe in all these localities was confined to the black spruce, growing in cold sphagnum bogs. Peck described the plant in 1872, as *Arceuthobium pusillum*.³

For many years nothing more was heard of the plant. A number of species, many of which had extended ranges, were found on various Coniferae in the far west. Recently the interest in this, the smallest of the mistletoes, revived and several observers report finding it in localities not known before, from Vermont, Massachusetts, and Maine.

During the past summer a group of white spruces on Monhegan Island (near Boothbay Harbor), Maine, was found covered with the *Arceuthobium*. The trees were much stunted, some of them were dead, and the living ones formed a striking contrast to their healthy neighbors, because of their short yellow leaves. It was thought rather

¹ Bull. Torr. Bot. Club **2**: 43, 1871. Proc. Acad. Sci. St. Louis **3**: LXXXIII, 1873 (presented May 20, 1872).

² Bull. Torr. Bot. Club **2**: 42, 47, 48, 1871; **3**: 24, 55, 1872; **4**: 15, 44, 1873. Proc. Acad. Sci. St. Louis **3**: LXXXIII, 1873. American Naturalist **6**: 166, 406, 1872.

³ Peck, C. H., 25 Ann. Report State Botanist, N. Y., p. 69, 1873.